

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 1-19 are now present in this application. Claims 1, 6 and 18 are independent.

Amendments have been made to the Abstract of the Disclosure and specification, and claims 1-19 have been amended. Reconsideration of this application, as amended, is respectfully requested.

Priority Under 35 U.S.C. § 119

Applicants thank the Examiner for acknowledging Applicants' claim for foreign priority under 35 U.S.C. § 119, and receipt of the certified priority document.

Specification Amendments

Applicants have amended the specification in order correct minor typographical errors, and to place the specification in better form.

Rejection Under 35 U.S.C. § 112, 2nd Paragraph

Claims 1-19 stand rejected under 35 U.S.C. § 112, 2nd Paragraph. This rejection is respectfully traversed.

The Examiner has set forth certain instances wherein the claim language is not clearly understood.

Particularly, the Examiner asserts that it is not clear as to what the "stream specific information" represents. Applicants refer the Examiner to the Specification, page 5 line 32 through page 6, lines 4 setting forth (in part) that "modified PSI or control information appended PSI is called stream specific information (SSI)."

The Examiner further asserts that it is not clear what the information linking the stream specific information" refers to and also that it is not clear as to what the "stream object" refers to.

Applicants refer the Examiner to the Specification, page 6, lines 9-16 wherein it is recited that "linking information consists of start and end time of each stream object" and a "stream object corresponds to a single program or digital stream recorded from recording start to stop."

Applicants submit that these features, as defined, particularly point out and distinctly claim the subject matter which Applicants regard as the

invention. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Rejection Under 35 U.S.C. § 102

Claims 1-19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,835,757 to Abiko. This rejection is respectfully traversed.

Abiko is directed to an optical disk apparatus for reading (out of an optical disk) error management information indicating the in-manufacturing and in-recording error and substitution areas, and storing the read-out information into a memory buffer (see Abstract of Abiko). A controller of the optical disk apparatus checks whether an area to be accessed in recording or reproducing the information into and from the optical disk is the error area or not by referring the error management information in the buffer area (see Abstract of Abiko).

In an optical disk, error areas found in manufacturing disks are called "in-manufacturing error areas" and error areas which are found in recording information are referred to as "in-record" error areas. These areas are not used, but other areas under control by a host computer are used as substitutions, also under the control of the host computer (see Abiko, Col. 1, lines 51-60).

Because the substitution areas are under the control of the host computer, and are not fixed in their locations on the optical disks, it is impossible to exchange different optical disks while in use (see Abiko, Col. 1, lines 63-66).

Therefore the object of Abiko is to provide an information processor which can quickly process the information in a record mode, to free the host computer from the processing for the substitution areas, and to simplify and quicken the access to the optical disk at the time of disk opening and closing (see Abiko, Col. 2 lines 21-27). In short, Abiko is directed to a scheme of detecting error substitution areas on a disk and providing substitute information for those areas.

Therefore Abiko does not disclose processing the received broadcast signal and the separated program specific information into separate digital streams compatible with a recording format, as recited in independent claim 1, as amended.

With regard to independent claim 6, Abiko is not directed to obtaining modified PSI or control information appended PSI (stream specific information) corresponding to a single program or digital stream recorded from recording start to stop (a stream object) being reproduced or to be reproduced based on a

result obtained from determining whether it is time to send stream specific information.

More concisely, Abiko does not disclose obtaining stream specific information corresponding to a stream object being reproduced or to be reproduced based on the result obtained from determining in (a), as recited in independent claim 6, as amended. Reconsideration and withdrawal of this art grounds of rejection are respectfully requested.

With regard to independent claim 18, Applicants have asserted (with respect to claims 1 and 6 above) that Abiko does not address dividing or separating digital video and audio data to be subsequently recorded into different areas.

Therefore Abiko does not disclose a disk device comprising divided recording areas, one being a data area where a digital stream of video and/or audio data is written, the other being a management information area where stream specific information and management data for controlling the reproduction and presentation of the data written in said data area are written, wherein the stream specific information is associated with each stream object which is a grouping unit of the written digital stream, as recited in independent claim 18, as amended. Reconsideration and withdrawal of this art grounds of rejection are respectfully requested.

With regard to dependent claims 2-5, 7-17 and 19, Applicants submit that claims 2-5, 7-17 and 19 depend, either directly or indirectly, from independent claims 1, 6 and 19, which are allowable for the reasons set forth above, and therefore claims 2-5, 7-17 and 19 are allowable based on their dependence from claim 1, 6 and 19. Reconsideration and allowance thereof are respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Percy L. Square, Registration No. 51,084 at (703) 205-8034, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

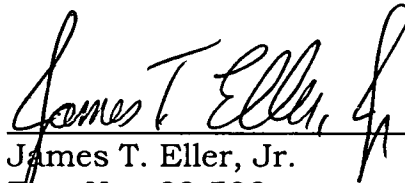
Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By:


James T. Eller, Jr.
Reg. No.: 39,538

PLS
JTE/PLS/asc

P.O. Box 747
Falls Church, Virginia 22040-0747
Telephone: (703) 205-8000

Attachment: Version with Markings to Show Changes Made
Abstract of the Disclosure

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Abstract of the Disclosure:

The Abstract of the Disclosure has been amended as follows:

--ABSTRACT OF THE DISCLOSURE

The present invention relates to method for recording program specific information (PSI) for a recorded data stream in an optical disk such as a high-density digital versatile disk (HD-DVD) and providing the recorded PSI to a presenting device such as a digital television. This method writes program or stream specific information in a management data recording area of a high-density disk, and[,] when the recorded data stream is reproduced, determines whether it is [the] time to send the stream specific information, obtains stream specific information [related with] corresponding to a stream object being reproduced, or to be reproduced based on the determination result, and transmits the obtained stream specific information. This method can maintain the disk storage capacity for real video and/or audio data by recording stream specific information in a management recording area of a high-density disk, and provide the stream specific information to a digital television promptly when it is necessary, thereby reducing the time duration of blank screen or discontinuity in video and/or audio presentation.--

In the Specification:

The paragraph beginning on page 1, line 12, has been amended as follows:

--A digital television which can receive digital broadcast programs and present them as high-quality picture and sound is being popularized. The

digital broadcast signal to be processed in the digital television contains PSI for various programs and data presentation control as well as a digital video and audio signal. It is specified that the PSI should be intermittently inserted in the data stream of the digital broadcast signal.--

The paragraph beginning on page 2, line 11, has been amended as follows:

--Therefore, when reproducing MPEG-formatted data stream recorded in a HD-DVD and [sends] sending it to the digital television 500 connected through a digital interface such as IEEE 1394 standard, the disk device 100 should provide PSI, which consists of a program association table (PAT), a program map table (PMT), a conditional access table (CAT), and so on as shown in FIG.2, to the digital television 500 in the format of a transport stream (TS) consisting of 188-byte-long transport packets (TPs).--

The paragraph beginning on page 2, line 19, has been amended as follows:

--To provide PSI for a recorded data stream to the digital television, which is connected through a digital interface such as IEEE 1394 standard, intermittently and periodically as in a digital broadcast signal, it may be considered that PSI is recorded dispersedly and repeatedly in a data recording area 'AREA 1' of a HD-DVD as shown in FIG. 3, and it is retrieved and transmitted sequentially along with the data stream.--

The paragraph beginning on page 2, line 26, has been amended as follows:

--However, if PSI is recorded dispersedly and repeatedly in a data recording area of a disk, the recording area for real data, that is, video and/or audio data is greatly reduced, which causes [to] a decrease [a] in the recording efficiency of a disk.--

The paragraph beginning on page 2, line 30, has been amended as follows:

--In addition, the digital television [should] must wait [for receiving] to receive one in a regular sequence among the PSI recorded dispersedly in the data recording area to present a received data stream even though data receiving has been resumed after a reproduction point is moved according to a key command of a user, or the digital interface such as IEEE 1394 standard is reset. Since the digital television can not select a data stream to decode into real picture and/or sound until the PSI for the data stream is received, there is inevitably discontinuity in video and/or audio or blank screen for a [while] duration of time.--

The paragraph beginning on page 3, line 8, has been amended as follows:

--It is an object of the present invention to provide an optical disk containing PSI in its management recording area and a method for recording PSI in an optical disk and providing the recorded PSI to a digital television, which records PSI for the recorded data stream in a specific area where management information for the recorded real data is written and, if it is time to send PSI, searches and reads PSI written in the specific area and sends it to a digital television.--

The paragraph beginning on page 3, line 16, has been amended as follows:

--A method of recording stream specific information along with a data stream in a disk according to the present invention, checks whether stream specific information [requires] needs to be changed while recording the data stream in the disk, generates stream specific information [adequate] corresponding to the data stream being recorded based on the checked result, and writes the generated stream specific information and an additional information, the additional information consisting [which consists] of start and/or end position data of a related stream object, to link the stream specific information with a stream object.--

The paragraph beginning on page 3, line 26, has been amended as follows:

--A method of providing data stream and stream specific information recorded in a disk according to the present invention, determines whether it is the time to send stream specific information, obtains stream specific information related with a stream object being reproduced or to be reproduced based on the determination result, and transmits the obtained stream specific information,[.] wherein the stream objects have different contents of stream specific information differing from each other.--

The paragraph beginning on page 5, line 5, has been amended as follows:

--The disk device of FIG. 4 comprises a PSI separator 21 separating PSI contained in the received broadcast signal; a signal processor 22 processing the received digital broadcast signal, which the PSI is separated from, into a digital stream [adequate to] compatible with a recording format; a PSI processor 23 processing the separated PSI into a digital stream [adequate to] compatible with a recording format; a signal selector 24 selecting one [among] of either the broadcast digital stream and the PSI stream; a pickup 27 writing the stream selected by the signal selector 24 in a high-density disk 28; a microcomputer 25 controlling the overall recording operation; and a memory 26 for storing data necessary for control operation of the microcomputer 25.--

The paragraph beginning on page 5, line 19, has been amended as follows:

--The PSI separator 21 detects PSI, which consists of PAT, PMT, CAT, and so on as explained above referring to FIG. 2, contained intermittently in digital broadcast signal, and separates it from the received digital broadcast signal. The PSI processor 23 processes the separated PSI into a digital stream [adequate to] compatible with the recording format of a high-density rewritable digital versatile disk (HD-DVD RAM), and the microcomputer 25 compares the separated PSI with PSI detected [before] previously to [know] determine whether the separated PSI is new, that is, the separated PSI contains data which is different from the data of the previous PSI. If the separated PSI is new, it is written in the high-density disk 28 under control of the microcomputer 25 after being processed by the PSI processor 23.--

The paragraph beginning on page 5, line 32, has been amended as follows:

--When the PSI is processed by the PSI processor 23, control information may be appended to the PSI or the PSI is modified for various presentation appropriate [to] for a data stream reproduced from a disk device. The modified PSI or control information appended PSI is called stream specific information (SSI).--

The paragraph beginning on page 6, line 5, has been amended as follows:

--The recording area where the PSI is written is a management information recording area where navigation data is written. The navigation data is used for controlling reproduction and presentation of recorded broadcast data containing a video and/or audio data stream processed by the signal processor 22. When writing PSI (or SSI), the microcomputer 25 generates linking information between the written PSI (or SSI) and a stream object, and appends the generated linking information to the written PSI (or SSI). A stream object corresponds to a single program or a digital stream recorded from recording start to stop, and the linking information consists of start and end time of each stream object.--

The paragraph beginning on page 6, line 17, has been amended as follows:

--All of the PSI (or SSI) including the linking information for stream objects, each stream object having different specific information for its own data stream, is written in the management information recording area.--

The paragraph beginning on page 7, line 3, has been amended as follows:

--From now on, a method of reproducing a data stream and specific information from the disk having PSI (or SSI) written only in the management information recording area 'AREA 2' and providing them to a digital television will be described.--

The paragraph beginning on page 7, line 23, has been amended as follows:

--The microcomputer 37 conducts an operation to provide PSI (or SSI), which [is corresponding] corresponds to the present data stream being reproduced or to be reproduced, to the digital television 500. To do so, it reads from the management information recording area 'AREA 2' when a key command directly from a user is entered, a packet command from the digital television 500 connected through IEEE 1394 standard is received, or there occurs a bus reset on the IEEE 1394. Then, the digital television 500 interprets the PSI (or SSI) received through the IEEE 1394 bus, and selects and decodes a data stream based on the interpretation of the PSI (or SSI).--

The paragraph beginning on page 8, line 11, has been amended as follows:

--After that, the microcomputer 37 monitors (S12) the operation mode of the disk device 300 and the digital television 500 connected through IEEE 1394 standard as well as whether [there occurs] a bus reset occurs on the digital interface of IEEE 1394. If the operation mode of the disk device 300 is reproduction mode (S13) in which a data stream recorded in the disk is or to be reproduced and transmitted in the form of TS, the microcomputer 37 checks whether a transmission operation of TS is first (S14), and if so [then], it searches the memory 38 for PSI (or SSI) corresponding to a stream object to be reproduced based on the linking information appended to all of PSI (or SSI) and applies the adequate PSI (or SSI) to the TS multiplexer 35 along with the real data stream reproduced from the data recording area 'AREA 1' of the disk 31.--

The paragraph beginning on page 9, line 3, has been amended as follows:

--The SIP may be [188-byte] 188-bytes long as specified for a transport packet (TP) in digital broadcast standard, and it may be transmitted repeatedly every 40 msec as shown in FIG. 8.--

The paragraph beginning on page 9, line 6, has been amended as follows:

--If a data stream of a new program starts to be transmitted, that is, a new stream object starts to be reproduced (S15) while a data stream being reproduced from the high-density disk 31 is being transmitted in the format of TS, the microcomputer 37 also searches the memory 38 for PSI (or SSI) corresponding to the new stream object to be reproduced and applies the [adequate] appropriate PSI (or SSI) to the TS multiplexer 35 along with the real data stream belonging to the new stream object which is reproduced from the data recording area 'AREA 1' of the disk 31.--

The paragraph beginning on page 9, line 15, has been amended as follows:

--For example, [If] if the start position information of the (N+1)-th stream object is detected after the N-th stream object is completely reproduced as shown in FIG. 8 while reproducing the disk 31, the microcomputer 37 reads the PSI (or SSI) [related with] corresponding to the (N+1)-th stream object from the memory 38 and then applies the read PSI (or SSI) to the TS multiplexer 35. In other words, the microcomputer 37 searches for PSI (or SSI) [related with] corresponding to each stream object being provided to the digital television 500 at present, based on the linking information and applies the found PSI (or SSI) to the TS multiplexer 35.--

The paragraph beginning on page 9, line 31, has been amended as follows:

--And, if the microcomputer 37 conducts a long jump of the pickup 32 according to a key input from a user (S16), it searches the memory 38 for PSI (or SSI) corresponding to the new or same stream object to be reproduced after the long jump, and applies the [adequate] appropriate PSI (or SSI) to the TS multiplexer 35 along with the real data stream belonging to the stream object to which the pickup 32 is moved.--

The paragraph beginning on page 10, line 10, has been amended as follows:

--And, if the digital television 500 connected with the disk device 300 through the IEEE 1394 standard is turned on (S17) or its viewing channel is

changed (S18), a corresponding command is sent to the microprocessor 37 of the disk device 300 through the digital interface. At this time, the microcomputer 37 reads PSI (or SSI) [related with] corresponding to a stream object being provided, or to be provided on request of disk reproduction to the digital television 500, and applies the [adequate] appropriate PSI (or SSI) to the TS multiplexer 35 along with the real data stream, if it is in a reproducing mode at present.--

The paragraph beginning on page 10, line 26, has been amended as follows:

--Furthermore, if [there occurs] a reset occurs on the IEEE 1394 digital interface (S19), the microcomputer 37 detects the reset while monitoring the status of the digital interfacing bus, reads again PSI (or SSI) [related with] corresponding to a stream object being provided, or to be provided to the digital television 500, and applies the [adequate] appropriate PSI (or SSI) to the TS multiplexer 35 along with the real data stream, if it is in a reproducing mode at present.--

The paragraph beginning on page 11, line 8, has been amended as follows:

--To be brief, whenever there is a command from a user or the digital television 500 connected through IEEE 1394, or [there occurs] a reset occurs on the interface bus, the disk device 300 reads the stored PSI (or SSI), which was reproduced beforehand from the management information recording area 'AREA 2' of the high-density disk 31, and then provides the read PSI (or SSI) to the connected digital television 500, so that the digital television 500 can select

and decode the data stream from the disk device 300 immediately after the interpretation of the PSI (or SSI) is done.--

The paragraph beginning on page 11, line 18, has been amended as follows:

--The method of providing specific information on a data stream according to the present invention can maintain the disk storage capacity for real video and/or audio data by recording stream specific information in a management recording area of a high-density disk, and provide the stream specific information to a digital television promptly when it is necessary, thereby reducing the time duration of blank screen or discontinuity in video and/or audio presentation.--

In the Claims:

The claims have been amended as follows:

1. (Amended) A method of recording stream specific information along with data stream in a disk, comprising the steps of:

separating program specific information contained in a received broadcast signal from the broadcast signal;

converting the separated program specific information into stream specific information and processing the stream specific information into a digital stream compatible with a recording format;

comparing the separated stream specific information with previous stream specific information to determine whether it contains data that is different from the previous stream specific information;

[(a)] checking whether stream specific information is the same or needs [requires] to be changed while recording the data stream in the disk;

[(b)] generating stream specific information corresponding [adequate] to the data stream being recorded based on a [the checked] result obtained from said checking; and

[(c)] writing the generated stream specific information and [an] additional information linking the stream specific information with a stream object.

2. (Amended) The method set forth in claim 1, wherein the additional information consists of start and/or end position data of a corresponding [related] stream object.

3. (Amended) The method set forth in claim 1, wherein the stream specific information is written in the same packetized format that the data stream is written in.

4. (Amended) The method set forth in claim 1, wherein the data stream is grouped into a single stream object if it is determined that the stream specific information [require] needs to be changed.

5. (Amended) The method set forth in claim 1, wherein the stream specific information is written in a management information recording area where presentation control information of the data stream is to be written.

6. (Amended) A method of providing data stream and stream specific information recorded in a disk, comprising the steps of:

(a) determining whether it is [the] time to send stream specific information;

(b) obtaining stream specific information corresponding to [related with] a stream object being reproduced or to be reproduced based on the [determination] result obtained from determining in (a); and

(c) transmitting the obtained stream specific information.

7. (Amended) The method set forth in claim 6, wherein [the] a stream object[s have] contains [different contents of] stream specific information, wherein the stream specific information for one object differs from the stream specific information of [each other] another object.

8. (Amended) The method set forth in claim 6, wherein said step (b) searches for stream specific information corresponding to a stream object based on [an] additional information appended to each stream specific information, the additional information having data to link stream specific information with a stream object.

9. (Amended) The method set forth in claim 8, wherein the additional information has start and/or end position data of a corresponding [related] stream object.

10. (Amended) The method set forth in claim 6, wherein the stream specific information has been written in a management information recording area where presentation control information of a data stream has been written.

11. (Amended) The method set forth in claim 6, wherein said step (a) determines that it is [the] time to send the stream specific information when a current reproduction position on the disk is moved.

12. (Amended) The method set forth in claim 6, wherein said step (a) determines that it is [the] time to send the stream specific information when a connected device receiving a reproduced data stream is turned on.

13. (Amended) The method set forth in claim 6, wherein said step (a) determines that it is [the] time to send the stream specific information when a data stream belonging to a new stream object starts to be reproduced.

14. (Amended) The method set forth in claim 6, wherein said step (a) determines that it is [the] time to send the stream specific information when a digital bus connected to a device receiving the reproduced data stream is reset.

15. (Amended) The method set forth in claim 6, wherein said step (a) determines that it is [the] time to send the stream specific information when the viewing channel of the connected device receiving the reproduced data stream is changed.

16. (Amended) The method set forth in claim 6, wherein said step (c) transmits the obtained stream specific information more than once before sending a reproduced real video and/or audio data stream.

17. (Amended) The method set forth in claim 6, wherein data packets delivering the stream specific information contain[s] time reference information to be used for data presentation timing in a connected device receiving a reproduced data stream.

18. (Amended) A disk device comprising divided recording areas, one being a data area where a digital stream of video and/or audio data is written, the other being a management information area where stream specific information [and management data] for controlling the reproduction and presentation of the data written in said data area are written, wherein the stream specific information is associated with each stream object which is a grouping unit of the written digital stream.

19. (Amended) [A] The disk device as set forth in claim 18, wherein the stream specific information is associated with each stream object by linking information appended to each stream specific information, the linking information being indicative of a start and/or end position of an associated stream object.